

What is claimed is;

1. A planar reference electrode including plate (4);
electrode connection part (1) ; electrode (3);
5 insulating membrane (2); inner reference solution
(5); junction (7 or 9); and the outer protection
membrane (6, 8 or 9), wherein the junction
comprises porous substance such as cotton thread,
glass fiber, cellulose nitrate, cellulose acetate,
10 filter paper and any material that can exhibit
capillary action; porous polymer membrane; or a
capillary either printed on the substrate or
inserted with a thin film.
- 15 2. The planar reference electrode as set forth in
claim 1, wherein the porous polymer membrane
comprises cellulose nitrate.
- 20 3. The planar reference electrode as set forth in
claim 1, wherein the plate (4) is selected from
the group consisting of alumina, glass and plastic
substance.
- 25 4. The planar reference electrode as set forth in
claim 1, wherein the electrode (3) is selected
from the group consisting of Ag, Pd, Cu, Pt,
Ag/AgCl, Ag containing 1-5 weight% of Pd and Ag

coated with Nafion.

- 5 5. The planar reference electrode as set forth in
 claim 1, wherein the inner reference solution (5)
 is the electrolyte containing hydrogel which
 consists of 85-99% weight% of glycerol solution;
 1-19 weight% of agar solution; polymeric glue; or
10 a soluble polymer dissolved with hygroscopic
 substance.
6. The planar reference electrode as set forth in
 claim 5, wherein the electrolyte is AgNO_3 or
 perchloric acid for the Ag electrode, KCl or NaCl
15 for the Ag/AgCl electrode, and KOH or NaOH for the
 mercury/mercury oxide electrode.
7. The planar reference electrode as set forth in
 claim 1, wherein the protection membrane (6, 8 or
20 9) is polymeric substance including polyester or
 porous polymer membrane.
8. A method for fabricating the planar reference
 electrode of claim 1 which comprises 7 stages;
25 (1) forming electrode connection part (1) on the
 plate (4);
 (2) forming conductor lines (3) on the plate (4)

by using the screen printing method;

(3) forming insulating layer (2) by screen printing on the conductors (3) formed at step 2, while excluding electrode site and connection sites;

(4) forming insoluble metal salt layer on the electrode site;

(5) placing a thin film that can provide a well around the electrode site and a line of capillary onto the substrate;

(6) placing inner reference solution (5) within the well; and

(7) forming protection membrane layer (8) that can cover the inner reference solution.

9. A method for fabricating the planar reference electrode of claim 1 which comprises 6 stages;

(1) forming electrode connection part (1) on the plate (4);

(2) forming electrodes (3) on the plate (4) by using the screen printing method;

(3) forming insulating layer (2) by screen printing on the conductors (3) formed at step 2, while excluding the electrode site and connection site (1);

(4) forming insoluble metal salt layer onto the electrode;

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- (5) forming hydrogel layer (5) using soluble polymer containing highly concentrated electrolyte; and
- (6) forming porous polymer protection membrane (9) on the hydrogel layer using porous polymer covering hydrogel layer completely.